

WHAT IS CLAIMED IS:

- sub 1
1. A composite comprising metal bonded chromium oxide, metal fluoride and optionally, one or more low temperature lubricating metals.
  2. A composite according to claim 1 wherein said metal fluoride comprises a fluoride of at least one metal selected from the group consisting essentially of Group I, Group II, rare earth metal and mixture thereof.
  3. A composite according to claim 2 wherein the amount of said chromium oxide present in said composite ranges from about 20 - 60 wt. %.
  4. A composite according to claim 3 wherein the amount of said bonding metal present ranges from about 20 - 60 wt. %.
  5. A composite according to claim 4 wherein said bonding metal comprises a metal alloy containing Cr and at least one of Ni, Co or mixture thereof, wherein said Ni, Co or mixture thereof is present in an amount of at least about 50 wt. % of said alloy.
  6. A composite according to claim 3 wherein said metal fluoride comprises a fluoride of at least one metal selected from the group consisting essentially of a Group IA alkali earth metal, a Group IIA alkaline earth metal, and mixture thereof.
  7. A composite according to claim 5 wherein said lubricating metal is selected from the group consisting essentially of Ag, Au, Pt, Pd/Rh, Cu and mixture thereof.
  8. A composite according to claim 6 wherein said lubricating metal is selected from the group consisting essentially of Ag, Au, Pt, Pd, Rh, Cu and mixture thereof.
  9. A composite according to claim 1 wherein said bonding metal binder is selected from the group consisting essentially of nickel based superalloys, cobalt based superalloys and mixture thereof.
- a B 12

~~10. A composite according to claim 9 wherein said chromium oxide and bonding metal together account for from about 60 - 80 wt. % of said composite.~~

~~4~~ 11. A composite according to claim ~~10~~<sup>8<sup>3</sup></sup> wherein said metal fluoride comprises a mixture of calcium fluoride and barium fluoride.

sub  
AA  
~~12. A self lubricating, friction and wear reducing composite material useful over a wide temperature range of from cryogenic temperature up to about 900°C consisting essentially of from about (i) 60 - 80 wt. % of metal bonded, particulate Cr<sub>2</sub>O<sub>3</sub>, (ii) 5 - 20 wt. % of a fluoride of at least one metal selected from the group consisting essentially of a metal of Group I, Group II, rare earth metal and mixture thereof, and, optionally, (iii) 5 - 20 wt. % of a low temperature metal lubricant selected from the group consisting essentially of Ag, Au, Pt, Pd, Rh, Cu and mixture thereof.~~

13. A composite according to claim 12 wherein said bonding metal comprises a metal alloy containing Cr and at least one of Ni, Co or mixture thereof, wherein said Ni, Co or mixture thereof is present in an amount of at least about 50 wt. % of said alloy.

a  
B  
B  
~~14. A composite according to claim ~~13~~<sup>12.5</sup> wherein said metal ~~fluoride~~<sup>fluoride</sup> is at least one metal selected from the group consisting essentially of a Group IA alkali earth metal, a Group IIA alkaline earth metal, and ~~mixture~~<sup>mixture</sup> thereof.~~

B B  
~~15. A composite according to claim ~~14~~<sup>4</sup> wherein said low temperature metal is selected from the group consisting essentially of Ag, Au, Pt, Pd, Rh, Cu and ~~mixture~~<sup>mixture</sup> thereof.~~

c  
B B  
~~16. A composite according to claim ~~15~~<sup>9</sup> wherein said metal ~~binder~~<sup>bonding</sup> is selected from the group consisting essentially of nickel based superalloys, cobalt based superalloys and mixtures thereof.~~

g  
7  
~~17. A composite according to claim ~~15~~<sup>7</sup> wherein said Cr<sub>2</sub>O<sub>3</sub> is present in an amount of from about 20 - 60 wt. %.~~